

Final degree project by Aura Joval Luque in Faculty of Veterinary Medicine. Thursday, June 27, 2019
(08193) Bellaterra, SPAIN

BACKGROUND

THE WILD BOAR (*Sus scrofa*)

It is an omnivore that colonizes all kinds of environments. It presents high reproductive capacity, sexual maturity between the ages of 8-12 months, gestation of 114-120 days and high average of offspring per litter (4-5 young). The females can weight 70-90 kg and the males can weight 110-130 kg .

DISTRIBUTION AND EVOLUTION OF THE WILD BOAR

Catalonia has a total area of 3,210,820 ha, of which 2,907,330 ha are natural areas of special protection (Box 1) where wild boar can inhabit. The monitoring of the populations is carried out in 22 spaces of representative zones of the different regions of Catalonia integrated in the network of observatories (Fig. 1) .

The wild boar is the most important species of hunting in Catalonia. The population is controlled by high hunting pressure throughout the hunting season.

Box 1.-Type of hunting areas of Catalonia and its correspondig surface (Idescat, 2018).

	Spots	Area (ha)
Natural spaces of special protection	1.493	2.907.330
Authorized hunting	1.398	2.895.299
Private and hunting areas	1.371	2.561.733
National hunting reserves	8	217.712
Controlled hunting areas	19	115.854
Non authorized hunting	95	12.031
Wildlife Refuges	93	11.675
Hunting shelters	2	356
Observatories	22	

TRICHINELLOSIS

Mandatory notification zoonotic disease in Spain produced by *Trichinella spp.* It is transmitted accidentally by the ingestion of meat or raw meat products, from animals infested during predation and when feeding on carrion and infested offal emplaced in the environment. It is a danger to public health.

The clinical manifestation is very variable, from asymptomatic to severe cases that can lead to death depending on the sensitivity of the individual, their immune status and the amount of larvae ingested. There is no curative treatment when the disease is at an advanced stage.

OBJECTIVES

The **main objective** is to know the current situation of trichinellosis in wild boar in Catalonia. For this, it has been analyzed:

- The situation of the population of wild boar in Catalonia during the last years.
- The trichinellosis casuistry in the wild boar and in humans.
- The current regulations and their compliance.

NORMATIVE TO EMPHASIZE

Royal Decree 526/2014 of June 20: mandatory declaration of the detection or suspicion of trichinosis.

Regulation 2015/1375 of August 10: the Artificial Digestion (AD) is the mandatory method analysis for all that meat directed to animal consumption. The *Trichinella spp.* Positives involves total confiscation of the animal and referral of positive samples to the National Reference Laboratory (LRN).

Decree 203/2015, of September 15: the obligation to communicate any suspicion or detection of trichina is even for doctors performing care tasks in Catalonia, in public or private centers.

Royal Decree 50/2018, of 2 February: standards of animal health and control for by-products of animals not intended for human consumption in hunting practice.

Decree 9/2019, of January 8, 2019: repeals the trichinosis analysis method. Even meat for self-consumption (not included in Regulation 2015/1375) is analyzed from now on by AD.

National Contingency Plan against Trichinella: all positive cases of *Trichinella spp.* detected in humans or animals must be reported, the samples must be sent to the LNR, the communication system must be activated (even under suspicion) to initiate the investigation by the correspondent health authorities of the Autonomous Community.

MATERIAL AND METODS

This study has been carried out through the analysis of the annual statistics of the hunting activity of Catalonia made by the General Directorate of Forest Ecosystems and Environmental Management and by the Hunting Activities Service. In addition, the data provided by the “Generalitat de Catalunya” and the department of agriculture, branch and fisheries, have been supplemented with data obtained through the World Animal Health Information Database, interface of the World Organization for Animal Health (OIE), the Statistical Institute of Catalonia interface, the Department of Health of Catalonia, as well as the weekly epidemiological bulletins in the network of the Carlos III Health Institute.

We have worked with a total volume of catches of 346,370 wild boars throughout the seven seasons during a period of 8 years: 2010-11 (29,947 captures), 2011-12 (32,665 captures), 2012-13 (35,359 captures), 2013-14 (34,152 captures), 2014-15 (36,447 catches), 2015-16 (54,264 catches), 2016-17 (58,185 catches) and 2017-18 (65,351 catches).

Fig.2.- Number of hunting licenses (green) and wild boars captured (red) per year in Catalonia

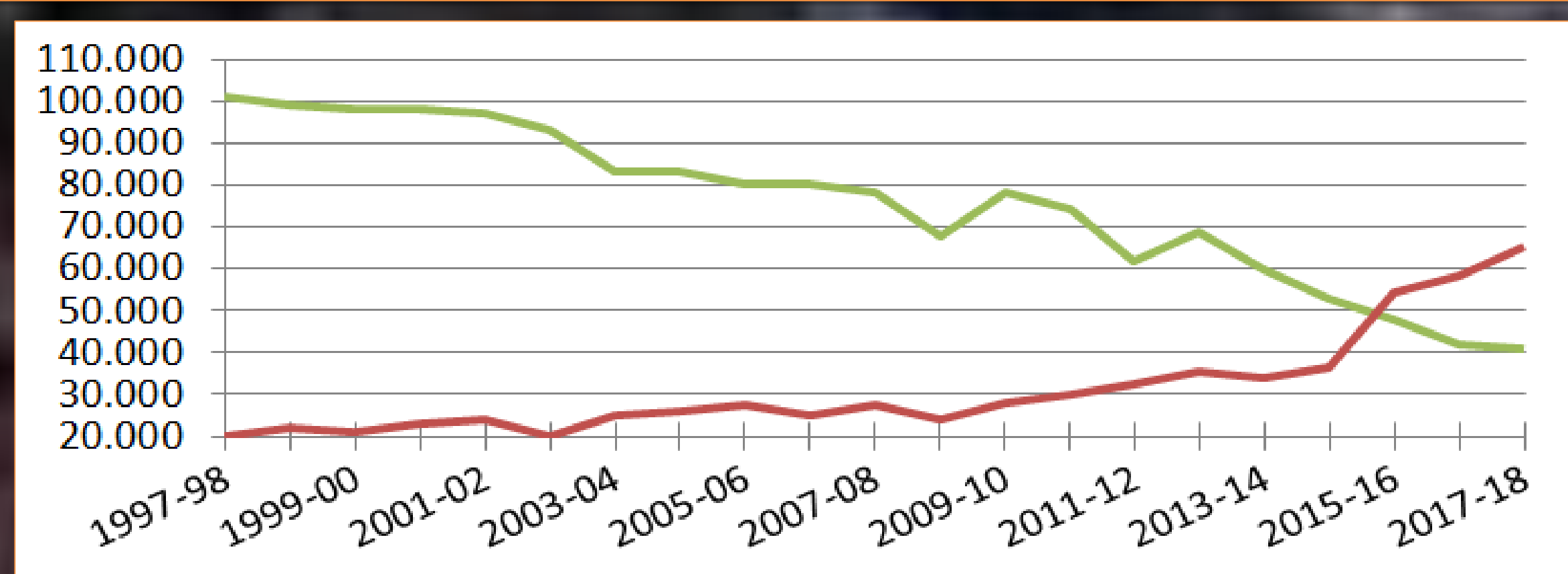
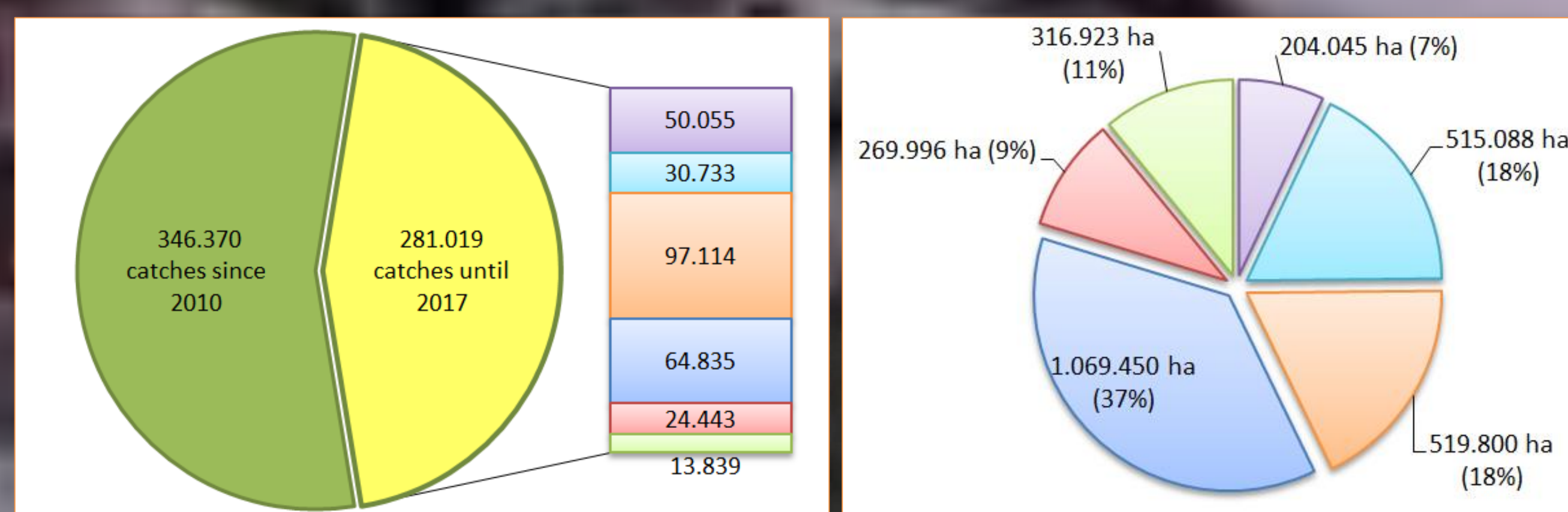


Fig.3.- Number of hunted wild boars in Catalonia (left) and surface by demarcations (right). **Legend:** Barcelona (purple), Central Catalonia (light blue), Girona (orange), Lleida (strong blue), Tarragona (red), Terres de l'Ebre (light green).



CONCLUSIONS

The information and data are scarce, incomplete and difficult to obtain. They are really necessary to know the risks and the importance of trichinellosis. Therefore, with the current data, the presence of trichina in Catalonia cannot be assessed.

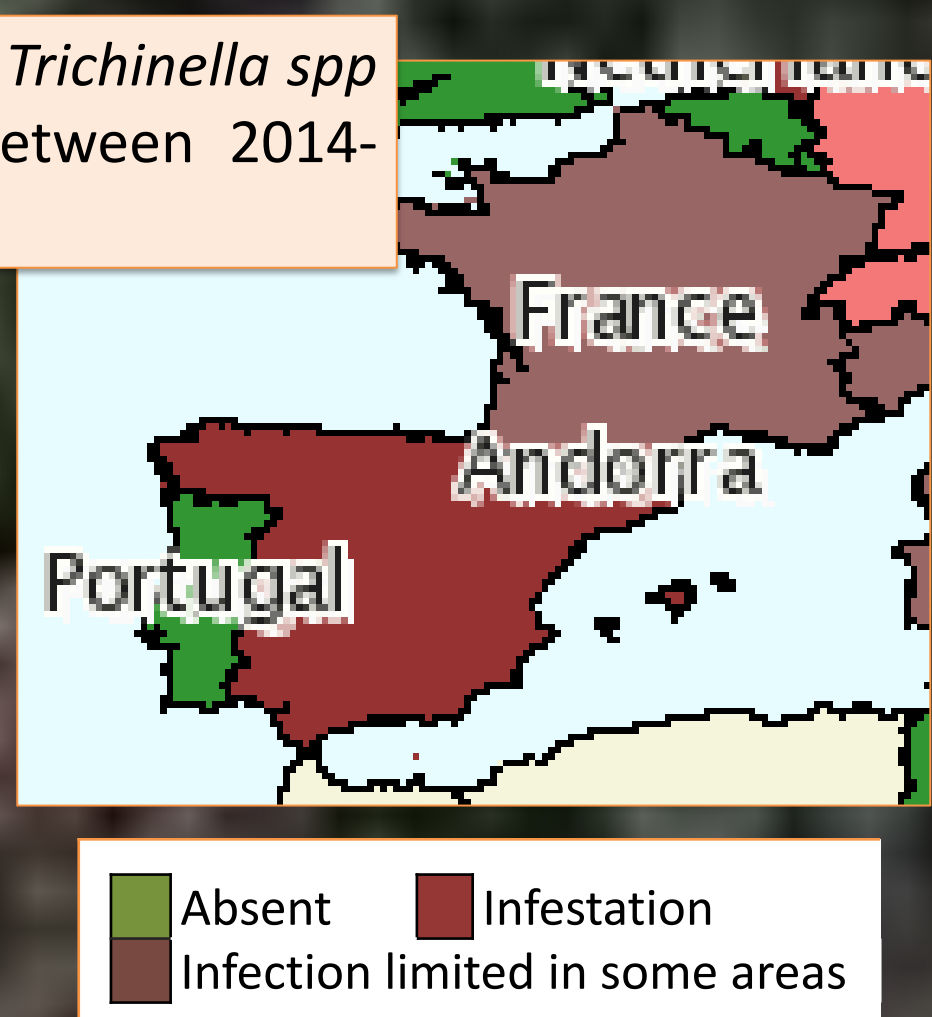
Consumers outside the hunting world and the hunters, ignore or belittle the risks of being infested. In addition, many believe that by freezing the meat they are exempt from performing the regulatory analysis. Control measures should also be regulated and established to monitor the direct marketing of hunter catches to restaurants.

Finally, the Administration must provide the necessary measures to ensure compliance with the regulations and inspect and verify that the practice carried out by the veterinarians correctly with their respective records.



Fig.1.-Location of the 22 observatories of the Wild Boar Monitoring Program (Generalitat de Catalunya, 2013)

Fig.4.- Presence of *Trichinella spp.* in wild animals between 2014-2017 (OIE, 2019)



DISCUSSION

The evolution of society, the changes in territorial uses and the establishment of special protection areas have left the hunting activity in the background. Hence, the increase in the census of wild fauna and the conflicts with humans. Indeed, the largest volume of captures come from Gerona and most exceptionally hunting authorizations come from Barcelona.

The meat of hunting destined to commercialization is, per law, analyzed by techniques of AD. Even so, new cases of trichinellosis keep appearing, 113 cases reported in Spain and 5 in Catalonia since 2010, by the intake of meat not intended for marketing. With trichinosis the wild boars with low parasitic charge could go unnoticed. Because of that, the Decree 9/2019, was imposed to meat destined for self-consumption (not included in EU Regulation 2015/1375).

Still, the casuistry information does not match with the data of journalistic reports that mentions outbreaks that should have been reflected in the count of cases declared in the Carlos III Institute. Furthermore, in a period of 7 years were captured in Catalonia an average of 49,481 boar/year, and an average of 9,414 wild boar/year analyzed in 4 years. That means that near 81% of pieces not intended to commercialization are not being analyzed.

Until now, any veterinarian could perform the analysis by trichinosis. After the imposition of the new decree, many hunters are left unprotected by the Administration. The obligation to carry out the analysis by AD does not mean that veterinarians are obligated to perform such analysis or have a digester. They can refuse and refer the hunter to other centers trained to do it. The hunter may not be willing to move to another center to analyze their catches.

In regards to the control of the trichina, it is essential to train and adequately inform both hunters and consumers. They have a large amount of information on the websites of the “Generalitat de Catalunya” and the Catalan Hunting Federation, as well as in its five territorial representations. However, it is very difficult to find access quickly, comfortably and intuitively to information, which should likewise be all put together in a single section. In 2014, the average age of the hunter group was over 50 years. There is a decrease in the issuance of hunting licenses since 1997, down from 100,000 to 41,070. 13% of these correspond to hunters over 65 years. However, there is a lack of data to confirm that it is a group that is aging and that is reluctant to use new technologies, such as the Internet.

The final control of trichinosis in humans depends on its control in the reservoirs and its maintenance in the wild boar, so it is necessary to insist on the practice of different preventive measures. Considering the potential fatal effect of trichinellosis, there should not be any positive cases found in humans. Its detection is indicative that the analysis is not carried out or not properly. And, finally, there is no certainty that all detected cases are being notified to the LNR. In addition, many cases can go unnoticed by confusing the diagnosis because the disease manifests itself with muscle pain and rheumatic processes.